UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/873,931	06/04/2001	Robert D. Horning	H16-16009 US	4429

7590 01/10/2007

John G. Shudy, Jr.
Patent Services
Honeywell International Inc.
101 Colombia Road
Morristown, NJ 07962

EXAMINER	
RAO, SHRINIVAS H	
ART UNIT	PAPER NUMBER
2814	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/873,931	HORNING ET AL.	
	Examiner	Art Unit	
	Steven H. Rao	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19-27*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *19-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *19-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on November 062,006 has been entered.

Therefore claim 19 as amended (subject to new matter rejection below) by the amendment and claims 20-27 as previously recited are currently pending in the application.

Information Disclosure Statement

No further IDS after the one filed on September 22, 2005 (mail date July 08, 2005) have been filed in this case.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 19- 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 19 as amended recites in line 5 " placing only a single strain compensated p+ layer on the first side of the substrate ".

The recitation " only a single strain compensated p+ layer "was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Examiner could only find relevant description of strain layer in para 013 and 0016 which state :

"Germanium is isoelectronic with silicon. Strain compensated layers as thin as one thousand .ANG.ngstroms and as thick as several tens of microns are contemplated. "

As is clear from the above the specification describes only " Layers" in plural and not singular , therefore the description of a single strain compensated p+ layer is not seen.

Dependent claims 20-27 are rejected at least for depending upon rejected independent claim19.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action: A person shall be entitled to a patent unless -(e) the invention was described in a patent granted

on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 19 to 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu et al. (U.S. Patent No. 6,689,211 herein after Wu).

With respect to claim 19 Wu describes a device produced to the method of making a silicon micromechanical structure, comprising the steps of: forming a lightly doped silicon substrate having a first and second side (Wu fig.1 D substrate #132) and having less than 5x1019 cm-3 boron therein (Wu col.4 line 29); placing (only a single) a strain compensated p+ layer on the first side of said substrate by doping with boron and germanium to form an etch stop (Wu figure 1 D 134 over 132, claims 1, 2), said p+ having a boron content of greater than 7x1019 cm-3 (Wu col.4 lines 35) and a germanium content of no more than about lx1021 cm-3 (Wu col. 10 lines 50-55) ; forming a mask on the second side for etching a predetermined pattern (Wu col. 8 lines 65, 33-37, etc.) ; etching said second side to said p+ layer to form a silicon diaphragm (

Wu col. 2 lines 22 to 50, col. 1 line 19-20) ; depositing an insulator on said p+ layer (Wu figs. 10-11F) and fabricating an electronic component as an micromechanical structure on said insulator. (col.1 lines 13 to 30).

The presently added limitation " only a single strain compensated p+ layer is new mater for reasons set out above and cannot be given patentable weight.

With respect to claim 20 Wu describes the device of claim 19, wherein said boron content is greater than lx1020 cm-3 (WU claims) and the germanium content is from about 0.5 x1021 cm-3 to about 2.0 x1021 cm-3. (Wu col. 10 lines 50-55, figure 8 etc.)

With respect to Claim 21 Wu describes the device of claim 19, wherein said micromechanical structure is a pressure sensor. (Wu col. 1 lines 15-20)

A. Claims 22, 24 -27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (U.S. Patent No. 6,689,211, herein after Wu) as applied to claims 19-22 above and further in view of Stemme et al. (U.S. Patent No. 6,546,084, herein after Stemme).

With respect to claim 22 Wu (col. 1 lines 19-22 etc.) describes the device of claim 21, wherein said electronic component is selected from the group consisting of resonant microbeams, but does not specifically describe a dielectrically isolated piezoresistors

However Stemme, a patent from the same filed of endeavor, describes in Col.4 lines 11-12 and col. 7 lines line 14, etc. describes an electronic component is selected from the group consisting of dielectrically isolated piezoresistors and resonant

microbeams to form ultraminiaturized sensors having high sensitivty in a cost effective manner.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to specify Stemme's dielectrically isolated piezoresistors and resonant microbeams for the unspecified sensors of Wu in Wu's device to form ultraminiaturized sensors having high sensitivity in a cost effective manner. (Stemme col. 2 lines 38-48).

With respect to claim 24 describes the device of claim 23, wherein said electronic component is selected from the group consisting of dielectrically isolated piezoresistors and resonant microbeams. (Stemme co1.4 lines 11-12 and col. 7 line 14).

With respect to claim 25 describes the device of claim 19, wherein said micromechanical structure is a dual web biplane accelerometer formed by forming a said p+ layer on both sides of said substrate, forming a proof mask and flexure etching on both sides of said layer until said etching reaches said p+ layers.

With respect to claim 26 Wu describes the device of claim 25, wherein said electronic component is selected from the group consisting of dielectrically isolated piezoresistors and resonant microbeams. (Stemme col.4 lines 11-12 and col. 7 line 14).

With respect to claim 27 Wu describes the device of claim 19, wherein said micromechanical structure includes a dielectrically isolated piezoresistor formed on a top surface of a first wafer, a second wafer is bonded to said first wafer, and said

second wafer forms a single crystal piezoresistor.(Stemme fig. 16 and col. 2 lines20-36).

B. Claim 23 is rejected Wu et al. (U.S. Patent No. 6,689,211, herein after Wu) and Stemme et al. (U.S. Patent No. 6,546,084, herein after Stemme) as applied above and further in view of Nilsson et al. (U.S. Patent No. 6,252,335, herein after Nilsson).

With respect to claim 23 Wu and Steeme describe the device of claim 19, wherein said micromechanical structure. Wu and Stemme do not specifically describe a cantilevered accelerometer.(Nilsson abstract line 1).

However Nilsson in its abstract line 1, etc. describes a cantilevered beam accelerometer to obtain a beam sensor that is small, very sensitive but with minimal orthogonal sensitivity and is highly resistant to shocks.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Nilsson's cantilevered accelerometer as the beam sensor described by Wu and Stemme in their (Wu and Stemme's) devices to obtain a beam sensor that is small, very sensitive but with minimal orthogonal sensitivity and is highly resistant to shocks. (Nilsson col. 1 lines 45 to 52).

Response to Arguments

Applicant's arguments filed on 08/16/ 2006 have been fully considered but they are not persuasive for the following reasons :

Applicants' contend that their presently recited claims are allegedly distinguished over the applied Wu and Stemme reference because Wu fails to teach or suggest "placing only a single strain compensated p+ layer on the first side of the substrate .."

As stated above the limitation only a single strain compensated p+ layer is new matter and cannot be given patentable weight, therefore Applicants' argument based on limitations for which patentable weight cannot be given is not persuasive.

Applicants 'argument that claims 20 and 21 because of their dependency upon allegedly allowable independent claim 19 is also not persuasive because as shown above independent claim 19 is not allowable.

Applicants' repeat the above contention with respect to claim 23 also and the argument that Wu fails to teach the limitation only a single strain compensated p+ layer is new matter and cannot be given patentable weight, therefore Applicants' argument based on limitations for which patentable weight cannot be given is not persuasive.

Claims 22 and 24-27 were alleged to allowable because of their dependency upon allegedly allowable independent claim 23, however as seen above claim 23 is not allowable and therefore claims 22 and 24-27 are also not allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is (571) 272-1718. The examiner can normally be reached on 8.30-5.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1714. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven H. Rao

Patent Examiner

January 5, 2007.

LONG PHAM
PRIMARY EXAMINER